COMMISSION
AGENDA MEMORANDUM **Item No.** 8d

ACTION ITEM **Date of Meeting** August 10, 2021

DATE: July 7, 2021

TO: Stephen P. Metruck, Executive Director

FROM: Eileen Francisco, Acting Director, Aviation Facilities and Capital Programs
Wayne Grotheer, Director, Aviation Project Management

SUBJECT: **Airfield Utility Improvements (AUI) Design (CIP #C801177)**

Amount of this request: $6,300,000
Total estimated project cost: $46,200,000

ACTION REQUESTED

Request Commission authorization for the Executive Director to (1) complete design and prepare construction documents for the Airfield Utilities Infrastructure (AUI) project (CIP C801177) at Seattle-Tacoma International Airport (SEA) and (2) enter into reimbursable agreements with the Federal Aviation Administration. This design authorization is for an amount of $6,300,000 out of a total estimated project cost of $46,200,000.

EXECUTIVE SUMMARY

The Facilities and Infrastructure (F&I) group at SEA have identified a variety of capital improvements required to replace and amend aging, failing, and over-capacity utility systems serving the existing terminal and apron areas. These utilities are located on the airside of the terminal and include sanitary sewer, domestic water, power, communications, and the industrial wastewater system (IWS). This AUI project will minimize operational impacts, achieve soft cost efficiencies, and enhance airfield construction safety management by sequencing the work to align with two existing programs: The Airfield Pavement and Supporting Infrastructure Replacement Program and the South Satellite Renovation Program. Construction of the utility improvements will begin in 2023 and conclude in 2025.

JUSTIFICATION

The Airfield Sanitary Sewer trunk-line serving the terminal and the South Satellite (SSAT) is in poor condition. F&I has identified deteriorating joints, sagging pipe and structural damage as part of their Closed-Circuit Television (CCTV) pipe condition assessment program. Now over 60 years old, this sewer trunkline is also exceeding current conveyance capacity and cannot take

additional sewer loads from the main terminal. The new sewer trunk-line will also support the C1 Building expansion and South Satellite renovation.

The existing cast iron water main that runs underneath Concourse B was built in the 1960's and has exceeded its 50-year life span resulting in a high risk of failure. This water main is serving both domestic and fire for Concourse B and the SSAT. Concurrent to replacement of the sanitary sewer trunk line described above, the AUI project will install a new ductile iron water main outside of the footprint of Concourse B allowing for access for maintenance or repairs.

A recent CCTV condition assessment of the IWS pipe revealed that portions of the system in the vicinity of the sewer and waterline work are also in poor condition and need to be relined or replaced to prevent failures and impacts to operations, as well as prevent infiltration of contaminated runoff.

There is a need for a power and communication ductbank that will run from the SSAT power station to the NSAT power station to create redundancy to the airport's terminals. These ductbanks are part of the Utility Master Plan. Where the AUI project is removing pavement and impacting operations to install the sewer and waterlines, it will use the opportunity to install significant portions of this ductbank system.

This project contributes to the Port's Century Agenda goal to meet the region's air transportation needs at Sea-Tac Airport for the next 25 years. It supports current and future Airport capacity by improving the efficiency of utility systems and extends their useful life.

Diversity in Contracting

Project staff is working with the Diversity in Contracting Department to include inclusion plans and the establishment of women and minority business enterprise (WMBE) aspirational goals for this project.

DETAILS

The project involves installing new ductile iron sewer pipe to replace under capacity, failing and aging sewer pipe; installing new ductile iron water pipe to replace aging cast iron water pipe that is currently located within the footprint of Concourse B; renewing aging and damaged IWS pipe through a combination of trenchless pipe relining and replacement with new pipe where pipe damage prohibits use of lining techniques; finally, installing new concrete-encased power and communication ductbanks running roughly parallel with the SS trunkline from the SSAT to roughly 100 feet past the north end of Concourse C. The excavation and replacement of existing pavements that are associated with the utility scope described in this section are part of the project scope.

Scope of Work

The AUI Project elements described above will be aligned with the Airfield Pavement and Supporting Infrastructure Program to capitalize on concurrent operational impacts and similar airfield work.

(1) Replacement of the sanitary sewer trunk line serving the main terminal
(2) Rerouting of the Concourse B water main around Concourse B
(3) IWS repairs and replacements
(4) Power ductbank from SSAT to north of Concourse C
(5) Communications ductbank from SSAT to north of Concourse C

Schedule

This work will be phased over three years with the 2021-2025 Airfield Pavement and Infrastructure Replacement program for years 2023-2025 to minimize operational impacts, lower soft costs, and promote airfield safety risk mitigation.

Activity	
Design start	2021 Quarter 3
Commission construction authorization Phase 1	2022 Quarter 4
Construction start	2023 Quarter 1
Commission construction authorization Phase 2	2023 Quarter 4
Construction start	2024 Quarter 1
Commission construction authorization Phase 3	2024 Quarter 4
Construction start	2025 Quarter 1
In-use date	2025 Quarter 4

Cost Breakdown	This Request	Total Project
Design	$6,300,000	$6,300,000
Construction	$0	$39,900,000
Total	$6,300,000	$46,200,000

ALTERNATIVES AND IMPLICATIONS CONSIDERED

When this project was originally scoped the Utility Master Plan was underway and since then has discovered additional utility deficiencies, this project is seeking to focus on those which align with the sewer trunk line installations.

Alternative 1 – Only replace the sanitary sewer trunk line.

Cost Implications: $23,200,000

Pros:

(1) Avoids the risk of a failed sewer system to Main Terminal and SSAT operations.

(2) Sewer capacity will meet current and future needs of the Main Terminal, C1 Building, and SSAT.
(3) Minimizes level of investment by focusing on highest risk infrastructure.

Cons:
(1) Does not address other utility repair and replacement needs.
(2) Will cause future operational impacts to repair, replace, or install other utilities in the same areas.
(3) If emergency repairs are needed for other failed utilities the costs will be much higher.
(4) Does not support the Utility Master Plan for water, IWS, power and communication needs.

This is not the recommended alternative.

Alternative 2 – Replace the sanitary sewer lines, the water line at Concourse B, and repair/replace adjacent IWS infrastructure.

Cost Implications: $32,800,000

Pros:
(1) Avoids the risk of both a failed sewer and water system to Main Terminal and SSAT operations.
(2) Sewer and water service will meet current and future needs of the Main Terminal, C1 Building, and SSAT.
(3) Adding IWS and waterline work reduces amount of pavement replacement and operational impacts for future work on these utilities.

Cons:
(1) Does not complete the work to install the power and communications ductbanks while pavement and operational impacts are occurring.
(2) Will not support the Utility Master Plan; postpones redundancy for power and communications from the main terminal to the South and North Satellites.

This is not the recommended alternative.

Alternative 3 – Replace the sanitary sewer trunk line, the water main at Concourse B, repair/replace adjacent IWS infrastructure. Install parallel power and communication ductbanks.

Cost Implications: $46,200,000

Pros:
(1) Avoids the risk of both a failed sewer and water system to Main Terminal operations.
(2) Sewer and water service will meet current and future needs of the terminal.
(3) Adding IWS, waterline, power and communications work reduces amount of pavement replacement and operational impacts for future work on these utilities.
(4) The power and communications ductbank will provide parallel pathway for redundant feeds from the Main Terminal to the South and North Satellites.

Cons:

(1) Requires additional cost for utility and pavement restoration up front.

This is the recommended alternative.

FINANCIAL IMPLICATIONS

Cost Estimate/Authorization Summary	Capital	Expense	Total
COST ESTIMATE			
Original estimate	$34,592,000	$0	$34,592,000
Current change	11,608,000	0	11,608,000
Revised estimate	46,200,000	0	46,200,000
AUTHORIZATION			
Previous authorizations	295,200	0	295,200
Current request for authorization	6,300,000	0	6,300,000
Total authorizations, including this request	6,595,200	0	6,595,200
Remaining amount to be authorized	$39,604,800	$0	$39,604,800

Annual Budget Status and Source of Funds

This project, Airfield Utility Improvements (AUI) Design (CIP #C801177), was included in the 2021-2025 capital budget and plan of finance with a budget of $34,592,000. A budget increase of $11,608,000 will be transferred from the Aeronautical Reserve C800753 resulting in zero net change to the Aviation capital budget. The funding sources would be Airport Development Fund (ADF) and revenue bonds.

Financial Analysis and Summary

Project cost for analysis	$46,200,000
Business Unit (BU)	Terminal Building 97% and IWS 3%
Effect on business performance (NOI after depreciation)	NOI after depreciation will increase due to inclusion of capital (and operating) costs in airline rate base
IRR/NPV (if relevant)	N/A
CPE Impact	$.13 in 2026

Future Revenues and Expenses (Total cost of ownership)

This project will not have an impact on annual Aviation Maintenance operating and maintenance (O&M) costs for mechanical or electrical systems and may lead to a reduction in the amount of time currently spent by the field crew on pipe inspections due to the current condition of the water and sewer systems. After implementing the project, the improved portions of the water and sewer systems will have a renewed 50-year asset life and a greatly reduced risk of failures, emergency repair and maintenance work, and impacts to operations.

ATTACHMENTS TO THIS REQUEST

(1) Presentation slides

PREVIOUS COMMISSION ACTIONS OR BRIEFINGS

None